Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	
Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use	ET Docket No. 94-32

To: The Commission

COMMENTS OF CYLINK CORPORATION

Cylink Corporation ("Cylink") respectfully submits its comments regarding the Commission's Notice of Proposed Rulemaking ("NPRM") in the above-referenced proceeding. Both through its membership in the Part 15 Coalition and in its separate filings, Cylink has participated actively in proceedings concerning use of and access to the radio spectrum by Part 15 technologies.

Among other things, the NPRM seeks comment on "retaining future use of the [2402-2417 MHz] band by Part 15 equipment."[1] For the reasons discussed below, Cylink, on its behalf and as a member of the Part 15 Coalition, urges the Commission to retain this band for the public's unconstrained, low-cost access to unlicensed Part 15 radio services. Cylink, therefore, most strongly opposes auctioning this band for licensed or unlicensed services.

I. BACKGROUND

Cylink is a pioneer in the commercial application of spread spectrum technologies. One of its founders, Dr. Jim Omura, is an internationally known authority on the subject and is the author of several books that serve as design references for commercial development organizations and as texts in universities. In 1986, Cylink started a research and development effort to manufacture commercial spread spectrum radio products conforming to the FCC's Part 15 rules. This effort resulted in a family of commercial digital modem products operating in all three ISM bands (*i.e.*, 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz).

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[1] Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, NPRM, ET Docket No. 94-32 (Nov. 8, 1994) at ¶ 18.

Various Cylink spread spectrum digital modems offer voice or data communications at data rates up to 2.048 Mbps (for E1 international services) and installed operating ranges in excess of 30 miles. Several thousand such Cylink radios are used in important educational, safety, commercial and industrial applications by customers, who provide access to wireless communications where other solutions are not available for the grade of service required or are not economically or physically deployable.

Cylink's commercial success — reflected in the increasing demand for Cylink products in the United States and worldwide — tracks the success generally of the Commission's Part 15 policies. Cylink has appeared before regulatory bodies in countries in Eastern Europe, Latin America, the Asia-Pacific region and other developing areas. Cylink has held up the FCC's Part 15 policy as an example of how government can harness private enterprise to serve national goals without detailed regulations and the bureaucracies needed to administer them. Building on the FCC's leadership in establishing a home in the ISM bands for unlicensed, low-power devices pursuant to Part 15, Cylink has successfully assisted in the allocation of similar bands for deployment of equipment developed and made in the United States. This promises substantial export business opportunity for Cylink and other Part 15 manufacturers, who lead the world in the development and application of Part 15 technologies.

Today, the "critical importance of wireless systems (operating under Part 15) to the future development of the National Information Infrastructure is well recognized and supported."[2] The Commission twice has reaffirmed its support for the use of the ISM bands by Part 15 technologies and has continued to encourage manufacturers to invest in the development of such technologies.[3]

The proposal to reallocate an important segment of the 2400 MHz ISM band for licensed use, in combination with the proposed introduction of Automatic Vehicle Monitoring /Location and Monitoring Services ("AVM/LMS") in the 900 MHz ISM band, signals a retreat from the Commission's earlier support for Part 15 technologies, which will deprive the public of grades of service in applications that can be best served by spread spectrum technologies and for which other spectrum is technically and economically unsuitable.

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[2] Letter from Larry Irving, NTIA, to Reed Hundt, FCC, ET Docket Nos. 94-32, 94-124, and PR Docket No. 93-61 (Dec. 12, 1994) at 1 ("NTIA Letter").

[3] See Revision of Part 15 of the Rules Regarding the Operation of Radio Frequency Devices Without an Individual License, First Report and Order, 4 FCC Rcd 3493 (1989), Amendment of Parts 2 and 15 of the Rules with Regard to the Operation of Spread Spectrum Systems, Report and Order, 5 FCC Rcd 4123 (1990).

II. DISCUSSION

The Commission proposes to designate the 2402-2417 MHz band for general Fixed and Mobile services and to make licenses available for this spectrum through competitive bidding.[4] In view of this proposal, the Commission "requests comment on retaining future use of (the 2402-2417 MHz) band by Part 15 equipment.[5] The Commission posits three possibilities: (1) "eliminating this band from Part 15 use in order to avoid any potential conflicts with future licensed service"' (2) "maintaining Part 15 use of this band and also implementing licensed services"; or (3) "maintaining Part 15 use of this band while limiting licensed use."[6] As the Commission has recognized, "reallocation of this band would jeopardize the significant private sector investment already made in developing new technologies operating under Part 15...(which would) result in loss of benefits to the public and the Federal Government."[7]

Cylink urges the Commission to retain future use of the 2402-2417 MHz band by unlicensed Part 15 technologies and to exclude future licensed services from the band, whether those licenses are awarded by auctions or otherwise.

A. The Commission Should Continue to Use Unlicensed Frequency Bands as Incubators to Create New Wireless Communications Industries.

The creation of the Part 15 industry, through the actions of the Commission in 1985, have a parallel in the creation of the PC industry by IBM and Apple. In neither case could the realization of the enormous success been forecast at the time of the original decision. The possibility of low-cost, unfettered public access to radio frequencies for communications and monitoring unleashed American ingenuity at its best. Companies invested in developing interference-resistant, spread-spectrum technologies for application to low-power devices. Users were able to identify needs and applications that could not be solved by other products and to gain access to the radio spectrum without the costs and delays of the regulatory process. As in the case of the PC providing easily accessible computing power, by lowering the threshold of economic, administrative and physical access to wireless communications, new applications have been developed, which have resulted in millions of installed devices and immeasurable public benefits.

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[4] NPRM ¶ 9.
[5] Id. ¶ 18.
[6] Id.
[7] Report to Ronald H. Brown, Secretary, U.S. Department of Commerce, Regarding the Preliminary Spectrum Reallocation Report ¶¶ 39, 51 (Aug. 9, 1994) ("FCC Report").

A demonstrated public need has been met with devices proven to: save costs of energy through automatic meter reading and optimized power generation, provide very low-cost broadband access to Internet services and other information networks for schools, libraries, telecommuters and home offices, provide mobility of telephonic and computer communications within offices and homes without extensive reconstruction and wiring, enable immediately installable video conferencing among and between buildings for educational instruction, health care monitoring and judicial procedures without construction of special studio facilities, facilitate the safe transport of chemicals and petroleum products though low-cost and easily deployable pipeline monitoring services, and enable control for potentially tens of thousands of traffic lights, at less than one-third the cost of wireline solutions, to ease road congestion, and significantly reduce pollution and new street construction. The third party industry of Part 15 resellers, system integrators, maintenance personnel and application service developers is growing rapidly to satisfy the previously described market needs and to invent new applications for public and corporate users.

Cylink believes that the conflicting problems of spectrum usage faced by the Commission cannot be resolved by inclusion of licensed services within the frequency bands used by Part 15 technologies, which are available only in these bands. Part 15 wireless products can be to the communications business and the public what the PC is to the computer industry and the public. The Commission should encourage and protect their access to the radio spectrum.

B. Introduction of Licensed Services into, or Auction of, the 2402-2417 MHz Band Would Chill the Market for Use and Development of Part 15 Technologies in This and All Other Frequency Bands.

The public interest would not be served by any actions that reduce incentives to develop new and improved spread-spectrum technologies for shared use of the 2402-2417 MHz band or other ISM bands. Since spread-spectrum radios have been encouraged, through Commission rules, to use as much available spectrum as possible, the proposed rules basically would eliminate the band from 2400-2417 MHz, since an isolated 2 MHz band (2400-2402 MHz) has little practical value for frequency-hopping or direct sequence radios. Thus, the services provided by Part 15 products would be lost for essentially 20% of the total band if new licensed services are added to the 2402-2417 MHz band through auctions or otherwise. The introduction of licensed services into this band would so limit the available spectrum as to make the band unusable for unlicensed, spread-spectrum technologies.[8]

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[8] Id. ¶ 39.

Cylink itself directly has felt the "chilling" effect that even this NPRM has had on the introduction of new products for use in this band. A "signal" has been sent to the public that Part 15 technologies are at risk in this band and other bands. A Cylink Part 15 2400 MHz product introduced the week before the publication of the NPRM was widely anticipated by Cylink's network of over 130 resellers in the United States. Capable of high-speed connections for local area networks at distances of 15 miles and beyond, the product has broad appeal to the public, particularly to school districts with multiple buildings and re-locatable computer installations. Similarly, businesses and institutions in health care and government, which have buildings spread over a campus or throughout a community, have expressed great need for wireless modem products where the data rate requirements demand efficient shared use of spectrum in the 2400 MHz band.

Within several days after the release of the NPRM, users questioned the depth of the Commission's commitment Part 15 unlicensed products and services. Purchasing decisions have been "frozen" or abandoned because potential customers believe that the suppliers of Part 15 technologies do not have reliable access to the spectrum. Solutions for provision of new services for interconnecting communities of interest are now in jeopardy. If the Commission actually adopts its proposal to introduce licensed services to the 2402-2417 MHz band, the imagination and investment that helped create the Part 15 industry will be drained from that industry.

Through potential "creeping erosion" of Part 15 spectrum in the 2400 MHz band and the 900 MHz band, manufacturers see considerable risks in undertaking major research and development investments. Yet-to-be-developed products may be irretrievably lost. Public-sector users see similar risks in capital budgeting for purchase and installation of devices and communications services that may be rendered unlawful or unusable by the current rulemaking or by future actions, if the Commission does not take a firm stand and make permanent the Part 15 regulations and spectrum allocations, as suggested recently by NTIA.[9]

At present, the Part 15 bands provide "significant opportunities for innovators and small companies to make contributions to the overall mix of products and services available through the NII."[10] The Part 15 industry, however, while willing to compete vigorously with new products and services and investment capital, may well be forced to move overseas for their research, development and manufacturing operations if there is little domestic market to be served.

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[9] See NTIA Letter at 2.

[10] See Allocation of Spectrum Below 5 GHz Transferred from Federal Government Use, NOI, 9 FCC Rcd 2175, Appendix D-6 (1994).

Cylink has build a substantial base of interest for Part 15 devices in third world and developing countries in Eastern Europe, Latin America and in China and India, among other countries. This market potential is virtually unlimited, because wired infrastructures do not exist and spread-spectrum wireless communications can be economically and immediately deployable without fear of electromagnetic interference. Part 15 products bring instant availability of information resources for health care, education, financial services and agricultural industries which are the early foundations for growth within these countries. With the adoption of rules patterned after the Part 15 regulations developed by the Commission, these international markets represent substantial opportunities to export literally billions of dollars of U.S. developed products and technologies.

The efficiencies of being close to the customer are well understood by U.S. companies as they re-engineer to be more competitive on a global basis. If customers and services are at risk because of lack of spectrum and long-term regulatory protection, the American leadership in spread-spectrum technology, originally sponsored by work at DARPA and other DoD contractors, may well go the way of the VCR recorder, LCD display, semiconductor manufacturing equipment, and television set — American inventions and innovations now representing substantial balance-of-payment problems. Worse yet, industry and government now recognize the impact —both economic and political — of losing such key technologies, the recovery of which is critical to a world leadership position in an information-based economy.

III. CONCLUSION

In summary, since the adoption of the Part 15 regulations, an unanticipated and substantial new set of public needs have been addressed and responded to with unlicensed low-power communications systems operating in all three of the ISM bands. The availability of spectrum in the 2400 MHz band has fueled a rapid growth for Cylink's products in this band with expansion of our investments in development, manufacturing, and sales personnel and those investments of our distributors and value-added resellers.

The 2400 MHz spectrum is particularly attractive for high-data rate services for interconnection to the Internet and other public and private networks, for eventual access to the NII, and for key applications in video conferencing and computer interconnection. Foreign countries are adopting similar rules to allow rapid wireless deployment of Part 15 devices, particularly in the 2400 MHz band since other ISM bands have been committed for other fixed or mobile services. The implementation of rules proposed in this Docket would have the serious deleterious and perhaps

unintended effect of discontinuing vigorous development of these new public services and losing American leadership in this crucial technology.

Therefore, Cylink strongly supports retaining the use of the 2402-2417 MHz band by Part 15 users and opposes auctioning this band for licensed or unlicensed services.

Respectfully submitted,

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